

IN THE CLAIMS

Claim 1 (Previously Presented): A flat display apparatus for successively receiving as its input gradation data representing brightness of pixels and for displaying an image based on the gradation data on a predetermined display portion, said flat display apparatus comprising:

a serial-parallel converter for sequentially and cyclically sampling the gradation data to convert the sampled gradation data into gradation data of a plurality of systems; and

a plurality of horizontal driving circuits provided in correspondence to the gradation data of the plurality of systems for setting gradations for pixels of corresponding columns of said display portion in correspondence to the gradation data of the corresponding plurality of systems, wherein

each of said plurality of horizontal driving circuits has a plurality of sampling circuits for successively sampling the gradation data of the corresponding one of the plurality of systems to distribute the gradation data of the corresponding plurality of systems to the corresponding columns, and a digital to analog converter for setting levels of output signals to the corresponding columns based on the sampling results from said plurality of sampling circuits,

said serial-parallel converter outputs the gradation data of the plurality of systems to said corresponding plurality of horizontal driving circuits, respectively, at timing corresponding to the sequentially cyclic sampling, and

said plurality of horizontal driving circuits sample the gradation data of the corresponding plurality of systems in said plurality of sampling circuits, respectively, at timing corresponding to sequentially cyclic sampling in said serial-parallel converter.

Claim 2 (Previously Presented): The flat display apparatus according to claim 1, wherein said serial-parallel converter, said plurality of horizontal driving circuits of the plurality of systems, and a timing generator for outputting timing signals as operational references to said serial-parallel converter and said plurality of horizontal driving circuits of the plurality of systems are formed on an insulating substrate of said display portion.

Claim 3 (Previously Presented): The flat display apparatus according to claim 1, wherein the plurality of systems are systems corresponding to odd number columns and even number columns in said display portion, and said plurality of horizontal driving circuits are disposed on upper and lower sides of said display portion, respectively.

Claim 4 (Previously Presented): The flat display apparatus according to claim 1, wherein said serial-parallel converter has a data converter for enlarging an amplitude of the gradation data and for sampling sequentially and cyclically the resulting data to convert the resulting data into data of the plurality of systems, and a level shifting circuit for reducing amplitudes of the data of the plurality of systems obtained by said data converter to output the gradation data of the plurality of systems.